



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Lonnie O. Ingram, *et al.*

U.S. Serial No.: 09/885297

Filed: June 19, 2001

For: *Methods and Compositions for Simultaneous  
Saccharification and Fermentation*

Attorney Docket No.: BCI-024CP

Group Art Unit: 1652

Examiner: Manjunath N. Rao

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June 24, 2003

Date of Signature and of Mail Deposit

By:

Peter C. Lauro  
Registration No. 32,360  
Attorney for Applicants

INFORMATION DISCLOSURE STATEMENT

Dear Sir:

Applicants and their Attorney are aware of the following publications and information, listed on the attached PTO Form 1449, and in accordance with 37 CFR §1.97 hereby submit these publications for the Examiner's consideration. Reference Nos. A11, A18, A19, B8, B13, D3, D17, E2 and E4 were cited in an International Search Report during the prosecution of PCT/US01/19690 dated March 4, 2002 which corresponds to the above referenced application. A copy of the report and each publication in PTO Form 1449 is enclosed. Furthermore, in accordance with 37 CFR §1.704(d), Applicants note that this communication was not received by any individual designated in §1.56(c) more than thirty days prior to the filing of this statement.

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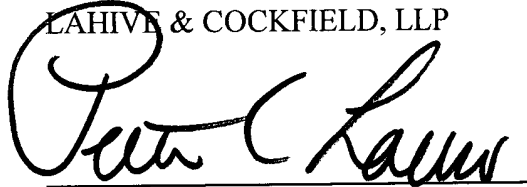
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This statement is not to be interpreted as a representation that the cited publications are material, that an exhaustive search has been conducted, or that no other relevant information exists. Nor shall the citation of any publication herein be construed *per se* as a representation that such publication is prior art. Moreover, Applicants understand that the Examiner will make an independent evaluation of the cited publications.

In accordance with 37 CFR §1.97(c)(2) and §1.17(p), please charge the **\$180.00** submission fee to our Deposit Order Account No. 12-0080. Please charge any necessary additional fees or credit any overpayments to our Deposit Order Account No. 12-0080.

Respectfully submitted,

LAHIVE & COCKFIELD, LLP

A handwritten signature in black ink, appearing to read "Peter C. Lauro", written over a horizontal line.

Peter C. Lauro, Esq.  
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Date: **June 24, 2003**

Enclosures



APPLICANT FACSIMILE OF FORM PTO-1449

REV 7-80

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## U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A1	3,990,944	11/76	Gauss <i>et al.</i>	195	33	
	A2	5,000,000	03/91	Ingram <i>et al.</i>	435	161	
	A3	5,028,539	07/91	Ingram <i>et al.</i>	435	161	
	A4	5,162,516	11/92	Ingram <i>et al.</i>	536	27	
	A5	5,424,202	06/95	Ingram <i>et al.</i>	435	161	
	A6	5,482,846	01/96	Ingram <i>et al.</i>	435	161	
	A7	5,487,989	01/96	Fowler <i>et al.</i>	435	165	
	A8	5,554,520	09/96	Fowler <i>et al.</i>	435	165	
	A9	5,821,093	10/98	Ingram <i>et al.</i>	435	161	

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
	A10	WO 98/45425 A1	10/98	WO				
	A11	WO 00/71729 A2,A3	11/00	WO				

## OTHERS (including Author, Title, Date, Pertinent Pages, Etc.)

	A12	Asghari <i>et al.</i> (1996) Ethanol production from hemicellulose hydrolysates of agricultural residues using genetically engineered <i>Escherichia coli</i> strain KO11. <i>J. Ind. Microbiol.</i> 16:42-47
	A13	Barbosa <i>et al.</i> (1992) Expression of the <i>Zymomonas mobilis</i> alcohol dehydrogenase II ( <i>adhB</i> ) and pyruvate decarboxylase ( <i>pdc</i> ) genes in <i>Bacillus</i> . <i>Current Microbiol.</i> 28:279-282
	A14	Barras <i>et al.</i> (1994) Extracellular enzymes and pathogenesis of soft-rot <i>Erwinia</i> . <i>Annu. Rev. Phytopathol.</i> 32:201-234
	A15	Beall <i>et al.</i> (1991) Parametric studies of ethanol production from xylose and other sugars by recombinant <i>Escherichia coli</i> . <i>Biotechnol. Bioeng.</i> 38:296-303
	A16	Beall <i>et al.</i> (1992) Conversion of hydrolysates of corn cobs and hulls into ethanol by recombinant <i>Escherichia coli</i> B containing integrated genes for ethanol production. <i>Biotechnol. Lett.</i> 14:857-862
	A17	Beall, <i>et al.</i> (1993) Genetic engineering of soft-rot bacteria for ethanol production from lignocellulose. <i>J. Indust. Microbiol.</i> 11:151-155
	A18	Boyer, M.-H. <i>et al.</i> (1987) Isolation of the gene encoding the major endoglucanase of <i>erwinia chrysanthemi</i> homology between cel genes of two strains of <i>erwinia-chrysanthemi</i> . <i>FEMS Microbiol. Lett.</i> 41(3):351-6
	A19	Boyer, M.-H. <i>et al.</i> (1987) Characterization of a new endoglucanase from <i>Erwinia chrysanthemi</i> . <i>Eur. J. Biochem.</i> 162(2):311-6
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		



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		FILING DATE <b>June 19, 2001</b>	

## OTHERS (including Author, Title, Date, Pertinent Pages, Etc.)

B1	Brooks et al. (1995) Conversion of mixed waste office paper to ethanol by genetically engineered <i>Klebsiella oxytoca</i> strain P2. <i>Biotechnol. Progress</i> . 11:619-625
B2	Burchhardt et al. (1992) Conversion of xylan to ethanol by ethanologenic strains of <i>Escherichia coli</i> and <i>Klebsiella oxytoca</i> . <i>Appl. Environ. Microbiol.</i> 58:1128-1133
B3	Cho, K.M. et al. (1999) Novel SSF process for ethanol production from microcrystalline cellulose using the $\delta$ -integrated recombinant yeast, <i>Saccharomyces cerevisiae</i> L2612 $\delta$ GC. <i>J. Microbiol. Biotechnol.</i> 9:340-345
B4	Conway, T. et al. (1987) Cloning and sequencing of the alcohol dehydrogenase II gene from <i>Zymomonas mobilis</i> . <i>J. Bacteriol.</i> 169(6):2591-7
B5	Conway et al. (1987) Gene expression in <i>Zymomonas mobilis</i> : promoter structure and identification of membrane anchor sequences forming functional lacZ' fusion proteins. <i>J. Bacteriol.</i> 169:2327-2335
B6	Doran et al. (1993) Fermentation of crystalline cellulose to ethanol by <i>Klebsiella oxytoca</i> containing chromosomally integrated <i>Zymomonas mobilis</i> genes. <i>Biotechnol. Progress</i> . 9:533-538
B7	Doran et al. (1994) Saccharification and fermentation of sugar cane bagasse by <i>Klebsiella oxytoca</i> P2 containing chromosomally integrated genes encoding the <i>Zymomonas mobilis</i> ethanol pathway. <i>Biotechnol. Bioeng.</i> 44:240-247
B8	Fierobe, H.-P. et al. (1993) Purification and characterization of endoglucanase C from <i>Clostridium cellulolyticum</i> . Catalytic comparison with endoglucanase A. <i>Eur. J. Biochem.</i> 217(2):557-65
B9	Figurski et al. (1979) Replication of an origin-containing derivative of plasmid RK2 dependent on a plasmid function provided in trans. <i>Proc. Natl. Acad. Sci. USA</i> . 76: 1648-1652
B10	Grohmann et al. (1994) Fermentation of galacturonic acid and other sugars in orange peel hydrolysates by the ethanologenic strain of <i>Escherichia coli</i> . <i>Biotechnol. Lett.</i> 16:281-286
B11	Guimaraes et al. (1992) Ethanol production from starch by recombinant <i>Escherichia coli</i> containing integrated genes for ethanol production and plasmid genes for saccharification. <i>Biotechnol. Lett.</i> 14:415-420
B12	Guimaraes et al. (1992) Fermentation of sweet whey by ethanologenic <i>Escherichia coli</i> . <i>Biotechnol. Bioeng.</i> 40:41-45
B13	Guisseppi, A. et al. (1991) Sequence analysis of the cellulase-encoding celY gene of <i>Erwinia chrysanthemi</i> : a possible case of interspecies gene transfer. <i>Gene</i> . 106(1):109-14
B14	Hahn-Hägerdal et al. (1994) An interlaboratory comparison of the performance of ethanol-producing micro-organisms in a xylose-rich acid hydrolysate. <i>Appl. Microbiol. Biotechnol.</i> 41:62-72
B15	He et al. (1991) Cloned <i>Erwinia chrysanthemi</i> out genes enable <i>Escherichia coli</i> to selectively secrete a diverse family of heterologous proteins to its milieu. <i>Proc. Natl. Acad. Sci. U.S.A.</i> 88(3):1079-83
B16	Hueck et al. (1998) Type III protein secretion systems in bacterial pathogens of animals and plants. <i>Microbiol. Mol. Biol. Rev.</i> 62(2):379-433

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Sheet 3 of 5

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## OTHERS (including Author, Title, Date, Pertinent Pages, Etc.)

C1	Ingram et al. (1987) Genetic engineering of ethanol production in <i>Escherichia coli</i> . <i>Appl. Environ. Microbiol.</i> 53(10):2420-5
C2	Ingram et al. (1988) Expression of different levels of ethanologenic enzymes from <i>Zymomonas mobilis</i> in recombinant strains of <i>Escherichia coli</i> . <i>Appl. Environ. Microbiol.</i> 54:397-404
C3	Ingram, et al. (1999) Enteric bacterial catalysts for fuel ethanol production. <i>Biotechnol. Prog.</i> 15:855-866
C4	Kuhnert, P. et al. (1997) Detection system for <i>Escherichia coli</i> -specific virulence genes: absence of virulence determinants in B and C strains. <i>Appl. Environ. Microbiol.</i> 63(2):703-9
C5	Lai et al. (1996) Cloning of cellobiose phosphoenolpyruvate-dependent phosphotransferase genes: Functional expression in recombinant <i>Escherichia coli</i> and identification of a putative binding region for disaccharides. <i>Appl. Environ. Microbiol.</i> 63:355-363
C6	Lindeberg et al. (1992) Analysis of eight out genes in a cluster required for pectic enzyme secretion by <i>Erwinia chrysanthemi</i> : sequence comparison with secretion genes from other gram-negative bacteria. <i>J. Bacteriol.</i> 174(22):7385-97
C7	Lindeberg et al. (1996) Complementation of deletion mutations in a cloned functional cluster of <i>Erwinia chrysanthemi</i> out genes with <i>Erwinia carotovora</i> out homologues reveals OutC and OutD as candidate gatekeepers of species-specific secretion of proteins via the type II pathway. <i>Mol. Microbiol.</i> 20(1):175-90
C8	Lynd et al. (1991) Fuel ethanol from cellulosic biomass. <i>Science</i> 251:1318-1323
C9	Martinez-Morales, F. et al. (1999) Chromosomal integration of heterologous DNA in <i>Escherichia coli</i> with precise removal of markers and replicons used during construction. <i>J. Bacteriol.</i> 181(22):7143-8
C10	Moniruzzaman et al. (1996) Ethanol production from afex pretreated corn fiber by recombinant bacteria. <i>Biotechnol. Lett.</i> 18:985-990
C11	Moniruzzaman, M. et al. (1997) Extracellular melibiose and fructose are intermediates in raffinose catabolism during fermentation to ethanol by engineered enteric bacteria. <i>J. Bacteriol.</i> 179(6):1880-6
C12	Moniruzzaman et al. (1998) Ethanol production from dilute acid hydrolysate of rice hulls using genetically engineered <i>Escherichia coli</i> . <i>Biotechnol. Lett.</i> 20:943-947
C13	Murata et al. (1990) Characterization of transposon insertion out- mutants of <i>Erwinia carotovora</i> subsp. <i>carotovora</i> defective in enzyme export and of a DNA segment that complements out mutations in <i>E. carotovora</i> subsp. <i>carotovora</i> , <i>E. carotovora</i> subsp. <i>atroseptica</i> , and <i>Erwinia chrysanthemi</i> . <i>J. Bacteriol.</i> 172:2970-2978
C14	Ohta, K. et al. (1991) Genetic improvement of <i>Escherichia coli</i> for ethanol production: chromosomal integration of <i>Zymomonas mobilis</i> genes encoding pyruvate decarboxylase and alcohol dehydrogenase II. <i>Appl. Environ. Microbiol.</i> 57(4):893-900
C15	Okamoto et al. (1994) Cloning of the <i>Acetobacter xylinum</i> cellulase gene and its expression in <i>Escherichia coli</i> and <i>Zymomonas mobilis</i> . <i>Appl. Microbiol. Biotechnol.</i> 42(4):563-8
C16	Osman, et al. (1985) Mechanism of ethanol inhibition of fermentation in <i>Zymomonas mobilis</i> CP4. <i>J. Bact.</i> 164:173-180

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D1	Nidetzky, et al. (1995) Synergistic interaction of cellulases from <i>Trichoderma reesei</i> during cellulose degradation p.90-112		
D2	Pósfai, G. et al. (1997) Versatile insertion plasmids for targeted genome manipulations in bacteria: isolation, deletion, and rescue of the pathogenicity island LEE of the <i>Escherichia coli</i> O157:H7 genome. <i>J. Bacteriol.</i> 179(13):4426-8		
D3	Poulsen, O.M. et al. (1992) Degradation of microcrystalline cellulose synergism between different endoglucanases of <i>cellulomonas</i> -sp atcc 21399. <i>Biotech. Bioeng.</i> 39(1):121-23		
D4	Pugsley et al. (1993) The complete general secretory pathway in gram-negative bacteria. <i>Microbiol. Rev.</i> 57(1):50-108		
D5	Pugsley et al. (1997) Recent progress and future directions in studies of the main terminal branch of the general secretory pathway in Gram-negative bacteria--a review. <i>Gene</i> 192: 13-19		
D6	Riedel, K. et al. (1997) Synergistic interaction of the <i>Clostridium stercorarium</i> cellulases avicelase I (CelZ) and avicelase II (CelY) in the degradation of microcrystalline cellulose. <i>FEMS Microbiol. Lett.</i> 147:239-243		
D7	Saito et al. (1990) Expression of a thermostable cellulase gene from a thermophilic anaerobe in <i>Saccharomyces cerevisiae</i> . <i>J. Ferment. Bioeng.</i> 69:282-286		
D8	Sheehan, J., (1994) Bioconversion for production of renewable transportation fuels in the United States. <i>Amer. Chem. Soc.</i> pp 1-52		
D9	Su et al. (1993) Simultaneous expression of genes encoding endoglucanase and $\beta$ -glucosidase in <i>Zymomonas mobilis</i> . <i>Biotechnol. Lett.</i> 15:979-984		
D10	Tomme, et al. (1995) Cellulose hydrolysis by bacteria and fungi. <i>Adv. Microb. Physiol.</i> 37:1-81		
D11	Wood et al. (1988) Methods for measuring cellulase activities. <i>Methods in Enzymology</i> 160:87-112		
D12	Wood, et al. (1992) Ethanol production from cellobiose, amorphous cellulose, and crystalline cellulose by recombinant <i>Klebsiella oxytoca</i> containing chromosomally integrated <i>Zymomonas mobilis</i> genes for ethanol production and plasmids expressing thermostable cellulase genes from <i>Clostridium thermocellum</i> . <i>Appl. Environ. Microbiol.</i> 58(7):2103-10		
D13	Wood et al. (1997) Production of recombinant bacterial endoglucanase as a co-product with ethanol during fermentation using derivatives of <i>Escherichia coli</i> KO11. <i>Biotech. Bioeng.</i> 55:547-555		
D14	Woodward, J. (1991) Synergism in cellulase systems. <i>Bioresource Technol.</i> 36:67-75		
D15	Wyman, C.E. et al. (1995) Economic fundamentals of ethanol production from lignocellulosic biomass. <i>Amer. Chem. Soc. Symp.</i> 618:272-290		
D16	Yomano et al. (1998) Isolation and characterization of ethanol-tolerant mutants of <i>Escherichia coli</i> KO11 for fuel ethanol production. <i>J. Ind. Microbiol. Biotechnol.</i> 20(2):132-8		
D17	Zhou, S. et al. (1999) Enhancement of expression and apparent secretion of <i>Erwinia chrysanthemi</i> endoglucanase (encoded by <i>celZ</i> ) in <i>Escherichia coli</i> B. B. <i>Appl. Environ. Microbiol.</i> 65:2439-2445		
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